

WHAT IS CLAIMED IS:

1. A planar light source system comprising:
at least one primary light source of substantially point-shaped
5 light source;
a light guide having a light incident face on which light emitted
from said primary light source is incident, guiding the incident light and
having a light emission face from which the incident light is emitted; and
a light deflecting device for controlling a direction of an
10 emission light from said light guide, wherein said primary light source is
disposed at a corner portion or an end surface of said light guide, and many
substantially arc-shaped elongated lenses are formed in parallel to each
other on at least one surface of said light deflecting device so as to
surround said primary light source.
- 15 2. The planar light source system as claimed in claim 1, wherein
said light deflecting device has a light incident surface which confronts
said light guide, and said substantially arc-shaped elongated lenses are
formed on at least the light incident surface.
3. The planar light source system as claimed in claim 2, wherein
20 each of said elongated lenses formed on said light deflecting device
comprises an elongated prism having two prism faces, and light incident
through at least one prism face is internally reflected and emitted from
a light emission surface in a desired direction.
4. The planar light source system as claimed in claim 3, wherein
25 each elongated prism of said light deflecting device comprises two prism
faces, one prism face being farther from said primary light source and
another prism face being nearer to said primary light source, and an
intersecting angle between said prism face farther from said primary light
source and a reference plane of said light deflecting device is equal to
30 40 to 80 degrees.

5. The planar light source system as claimed in claim 2, wherein at least a part of at least one prism face constituting each elongated prism of said light deflecting device is designed to have a convex or concave curved-surface.

5 6. The planar light source system as claimed in claim 5, wherein when there is assumed virtual elongated prisms arranged at the same pitch as an arrangement of said elongated prisms of said light deflecting device, each virtual elongated prism having a triangular cross section with an apex angle of θ , and peak light in an emission light distribution of light
10 emitted from said light emission face of said light guide being incident through one prism face, internally reflected by the other prism face and then emitted from the light emission surface in a desired direction, at least one prism face constituting each elongated prism of said light deflecting device is designed to have a convex curved-surface with respect
15 to a shape of each of said virtual elongated prism.

7. The planar light source system as claimed in claim 6, wherein the apex angle θ of said virtual elongated prisms is set so that the peak light is emitted within ± 5 degrees relative to the normal direction of the light emission surface of said light deflecting device.

20 8. The planar light source system as claimed in claim 5, wherein when there is assumed virtual elongated prisms arranged at the same pitch as an arrangement of said elongated prisms of said light deflecting device, each virtual elongated prism having a triangular cross section with an apex angle of θ , and peak light in an emission light distribution of light
25 emitted from said light emission face of said light guide being incident through one prism face, internally reflected by the other prism face and then emitted from the light emission surface in a desired direction, at least one prism face constituting each elongated prism of said light deflecting device is designed to have a concave curved-surface with respect
30 to a shape of each of said virtual elongated prism.

9. The planar light source system as claimed in claim 1, wherein said light deflecting device has elongated lenses formed on at least a light emission surface at the opposite side to a light incident surface confronting said light guide.

5 10. The planar light source system as claimed in claim 9, wherein said light deflecting device refracts light incident through the light incident surface and emits the light from the light emission surface in a desired direction.

10 11. The planar light source system as claimed in claim 10, wherein each elongated prism of said light deflecting device comprises two prism faces, one prism face being farther from said primary light source and another face being nearer to said primary light source, and an intersecting angle between said prism face farther from said primary light source and a reference plane of said light deflecting device is equal to 35 to 55
15 degrees while an intersecting angle between the prism face nearer to said primary light source and the reference plane of said light deflecting device is equal to 35 to 55 degrees.

12. The planar light source system as claimed in any one of claims 1 to 11, wherein said light guide contains therein a structure having a
20 refractive index different from that of said light guide.

13. The planar light source system as claimed in any one of claims 1 to 11, wherein said light guide has an uneven shape on at least one surface thereof.

14. The planar light source system as claimed in claim 13, wherein
25 an average slant angle of the uneven shape formed on the surface of said light guide is equal to 2 to 12 degrees.

15. The planar light source system as claimed in claim 14, wherein the uneven shape formed on the surface of said light guide comprises many elongated lenses arranged in parallel to each other.

30 16. The planar light source system as claimed in claim 15, wherein

said many elongated lenses are disposed in a substantially arc-shaped arrangement so as to surround said primary light source.

17. The planar light source system as claimed in claim 16, wherein said elongated lenses are discretely arranged with a flat portion
5 interposed between neighboring elongated lenses.

18. The planar light source system as claimed in claim 17, wherein a ratio of the lens portion to the flat portion is varied.

19. The planar light source system as claimed in claim 18, wherein the ratio of the lens portion to the flat portion is increased as the
10 distance from said primary light source is increased.

20. The planar light source system as claimed in claim 18, wherein the ratio of the lens portion to the flat portion is varied in a circumferential direction of an arc-shape surrounding said primary light source.

15 21. The planar light source system as claimed in claim 14, wherein the uneven shape formed on the surface of said light guide is a roughened surface.

22. The planar light source system as claimed in claim 13, wherein said light guide has uneven grooves on the opposite surface to the surface
20 on which the uneven shape is formed so that the uneven grooves extend in a radial direction with said primary light source positioned substantially at the center.

23. A light deflecting device for a planar light source system, wherein said light deflecting device is designed in a rectangular shape and
25 has many elongated lenses arranged in parallel to each other on at least one surface thereof, said elongated lenses extend substantially arcuately with a corner portion or a one point of an end surface of said light deflecting device positioned substantially at the center of an arc.

24. The light deflecting device as claimed in claim 23, wherein
30 said elongated lenses are formed on at least a light incident surface

thereof.

25. The light deflecting device as claimed in claim 24, wherein each of said elongated lenses comprises an elongated prism having two prism faces, and light incident through at least one prism face is internally
5 reflected and emitted from a light emission surface in a desired direction.

26. The light deflecting device as claimed in claim 25, wherein each of said elongated prisms comprises two prism faces, one of which is located at a farther position from the center of the arc and the other of which is located at a nearer position to the center of the arc, and an
10 intersecting angle between said prism face located at the farther position from the center of the arc and a reference plane of said light deflecting device is equal to 40 to 80 degrees.

27. The light deflecting device as claimed in claim 26, wherein at least a part of at least one prism face constituting each of said elongated
15 prisms is designed to have a convex or concave curved-surface shape.

28. The light deflecting device as claimed in claim 27, wherein when there is assumed virtual elongated prisms arranged at the same pitch as an arrangement of said elongated prisms, each virtual elongated prism having a triangular cross section with an apex angle of θ , and peak light
20 in a distribution of light incident through the light incident surface being incident on one prism face, internally reflected by the other prism face and then emitted from the light emission surface in a desired direction, at least one prism surface constituting each of said elongated prisms is designed to have a convex curved-surface with respect to a shape
25 of each of said virtual elongated prism.

29. The light deflecting device as claimed in claim 28, wherein the apex angle θ of said virtual elongated prisms is set so that the peak light is emitted within ± 5 degrees relative to the normal direction of the light emission surface of said light deflecting device.

30 30. The light deflecting device as claimed in claim 27, wherein

when there is assumed virtual elongated prisms arranged at the same pitch as an arrangement of said elongated prisms, each virtual elongated prism having a triangular cross section with an apex angle of θ , and peak light in a distribution of light incident through the light incident surface

5 being incident on one prism face, internally reflected by the other prism face and then emitted from the light emission surface in a desired direction, at least one prism surface constituting each of said elongated prisms is designed to have a concave curved-surface with respect to a shape of each of said virtual elongated prism.

10 31. The light deflecting device as claimed in claim 23, wherein said elongated lenses are formed on at least a light emission surface at the opposite side to a light incident surface.

32. The light deflecting device as claimed in claim 31, wherein light incident through the light incident surface is refracted and emitted
15 in a desired direction from the light emission surface.

33. The light deflecting device as claimed in claim 32, wherein each of said elongated prisms comprises two prism faces, one prism face being farther from the center of the arc and the other face being nearer to the center of the arc, and an intersecting angle between said prism face
20 farther from the center of the arc and a reference plane of said light deflecting device is equal to 35 to 55 degrees while an intersecting angle between the prism face nearer to the center of the arc and the reference plane of said light deflecting device is equal to 35 to 55 degrees.